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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/718,528

11/21/2000

John E. Dolan

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EXAMINER

DASTOURI, MEHRDAD

ART UNIT

PAPER NUMBER

2623

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/718,528

Applicant(s)

DOLAN, JOHN E.

Examiner

Mehrdad Dastouri

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed February 17, 2004, has been entered and made of record.
2. Objection to Claims 8 and 11-13 has been withdrawn in view of Applicant's amendment.
3. Applicant's arguments have been fully considered but they are not persuasive. Applicant argues in essence that prior art of record (Noh) does not disclose the "valleys" and "ridges" defined in the present application corresponding to the approximate centerline of a character stroke when the stroke has a rounded cross-section and corresponds to somewhat parallel lines or curves on either side of the centerline of the stroke when the stroke has a central plateau-like cross-section.

It is respectfully submitted that the above-mentioned detailed limitations described in the present application are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noh (U.S. 5,946,420) in view of Ancin et al (U.S. 6,227,725).

Regarding Claim 1, Noh discloses a method for detecting text in a mixed-content image, said method comprising:

identifying an edge associated with a high-contrast intensity change (Figures 1 and 2; Column 6, Lines 51-61; Figure 5; Column 7, Lines 37-67, Column 8, Lines 1-40), convolution-based edge detection);

identifying a stroke axis (Figures 3-5; Column 8, Lines 17-32, plateau 124; Column 11, Lines 27-55, plateau D24);

measuring a spatial relationship between said axis and said edge (Figures 3-5; Column 8, Lines 17-56; Column 11, Lines 27-55); and

identifying said edge as a text edge when said spatial relationship conforms to specified criteria (Figures 3-5; Column 8, Lines 17-56; Column 11, Lines 27-55).

Noh discloses convolution-based edge-detection wherein the convolution acts as a first derivative edge-detection (Figure 5; Column 8, Lines 33-40), but does not explicitly disclose identifying an intensity gradient direction for said edge. However, identifying an intensity gradient direction is a conventional step in edge detecting process.

Ancin et al disclose a text enhancement system comprising identifying an intensity gradient direction of the text edges (Figure 2; Column 2, Lines 57-64; Column 4, Lines 19-66).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Noh's invention according to the teachings of Ancin et al to identify an intensity gradient direction of the text edges because it is an essential step in edge detection routinely implemented in image processing for text enhancement operations.

Regarding Claim 2, Ancin et al further disclose the method of Claim 1 wherein said identifying an edge and said identifying an intensity gradient direction comprises a first-derivative edge detection method (Figure 2; Column 2, Lines 57-64; Column 4, Lines 19-62).

Regarding Claim 3, Ancin et al further disclose the method of Claim 1 wherein said identifying an edge and said identifying an intensity gradient direction comprises a Sobel edge detection method (Figure 2; Column 4, Lines 19-62).

Regarding Claim 4, Noh further discloses the method of Claim 1 wherein said measuring a spatial relationship comprises a transverse directional search (Figures 3-5; Column 8, Lines 17-56; Column 11, Lines 27-55. As depicted in Figures 1-3, the spatial relationship of the stroke axis 124 and edges 123 (125) is measured in a transversal direction.).

Regarding Claim 5, Noh further discloses the method of Claim 1 wherein said measuring a spatial relationship comprises measuring the proximity of an edge to an axis in a direction substantially transverse to a stroke (Figures 3-5; Column 8, Lines 17-56; Column 11, Lines 27-55. As depicted in Figures 1-3, the spatial relationship of the

stroke axis 124 and edges 123 (125) is measured based on the proximity of an edge to an axis in a direction substantially transverse to a stroke.).

Regarding Claim 6, Noh further discloses the method of Claim 1 wherein said measuring a spatial relationship comprises measuring the proximity of an edge to an axis in a direction substantially perpendicular to said axis (Figures 3-5; Column 8, Lines 17-56; Column 11, Lines 27-55. As depicted in Figures 1-3, the spatial relationship of the stroke axis 124 and edges 123 (125) is measured based on the proximity of an edge to an axis in a direction substantially perpendicular to the stroke axis.).

Regarding Claim 7, Noh further discloses the method of Claim 1 wherein said measuring a spatial relationship comprises measuring the proximity of an edge to an axis in a direction parallel with said intensity gradient direction (Figures 1-3. Edges are inherently located at the intensity gradient directions.).

Regarding Claim 8, Noh further discloses the method of Claim 1 wherein said identifying a stroke axis comprises the acts of:

analyzing successive pixels to identify a coincident curvature position wherein a substantial curvature of an intensity map occurs at the same location as a minimal curvature of said intensity map in another direction (Figures 1-3; Column 3, Lines 15-20; Column 7, Lines 5-26. Substantial curvature and minimal curvature of the intensity map occur at the edge locations on the left and right sides of stroke axis 124.).

Regarding Claim 9, Ancin et al further disclose method of Claim 1 wherein said measuring a spatial relationship comprises the acts of:

beginning at a subject pixel that has been identified as an edge and progressively analyzing adjacent pixels in a direction parallel with the intensity gradient of the subject pixel (Figures 2 and 7A-7H; Column 4, Lines 19-62; Column 7, Lines 12-67, Column 8, Lines 1-47); and

analyzing each successive pixel to determine whether said successive pixel has been identified as an axis pixel (Figures 2 and 7A-7H; Column 4, Lines 19-62; Column 7, Lines 12-67, Column 8, Lines 1-47).

With regards to Claims 10, 18 and 21, arguments analogous to those presented for Claim 1 are applicable to Claims 10, 18 and 21.

With regards to Claim 11, arguments analogous to those presented for Claim 2 are applicable to Claim 11.

Regarding Claim 12, Noh further discloses the method of Claim 10 wherein said processing said image to identify axes comprises an analysis of intensity map curvature around a given location (Figures 1-3; Column 8, Lines 17-49).

Regarding Claim 13, Noh further discloses the method of Claim 10 wherein said processing said image to identify axes comprises analyzing successive pixels to identify a coincident curvature position wherein a maximum curvature of an intensity map, said maximum curvature being greater than a threshold value, occurs at the same location as a minimal curvature of said intensity map, said minimal curvature being lower than a specified value and being in a direction approximately perpendicular to said maximum curvature (Figures 1-3; Column 8, Lines 17-49; Column 11, Lines 34-59).

With regards to Claim 14, arguments analogous to those presented for Claims 1 and 7 are applicable to Claim 14.

With regards to Claims 15 and 21, arguments analogous to those presented for Claims 10 and 13 are applicable to Claims 15 and 21.

With regards to Claims 16 and 17, arguments analogous to those presented for Claim 10 are applicable to Claims 16 and 17.

With regards to Claims 18 and 19, arguments analogous to those presented for Claim 10 are applicable to Claims 18 and 19.

With regards to Claim 20, arguments analogous to those presented for Claim 13 are applicable to Claim 20.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mehrdad Dastouri whose telephone number is (703) 305-2438. The examiner can normally be reached on Monday to Friday from 8:00 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**MEHRDAD DASTOURI
PRIMARY EXAMINER**



Mehrdad Dastouri
Primary Examiner
Art Unit 2623
May 2, 2004